by Schneider Electric

INSTALLATION

IP110 Series Camclosure®

Integrated Camera System

C3432M-G (4/09)

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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
7. Only use attachments/accessories specified by the manufacturer.
8. Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases shall be placed on the apparatus.
9. Installation should be done only by qualified personnel and conform to all local codes.
10. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
11. Use only installation methods and materials capable of supporting four times the maximum specified load.
12. Use stainless steel hardware to fasten the mount to outdoor surfaces.
13. Only use replacement parts recommended by Pelco.
14. After replacement/repair of this unit's electrical components, conduct a resistance measurement between the line and exposed parts to verify the exposed parts have not been connected to the line circuitry.

Regulatory Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RADIO AND TELEVISION INTERFERENCE

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You may also find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402.

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Open Source Software Notice

This product includes certain open source or other software originated from third parties that is subject to the GNU General Public License (GPL), GNU Library/Lesser General Public License (LGPL), and different and/or additional copyright licenses, disclaimers, and notices.

The exact terms of GPL, LGPL, and some other licenses are provided to you with this product. Please refer to the exact terms of the GPL and LGPL at *http://www.fsf.org (Free Software Foundation)* or *http://www.opensource.org (Open Source Initiative)* regarding your rights under said license. You may obtain a complete corresponding machine-readable copy of the source code of such software under the GPL or LGPL by sending your request to *digitalsupport@pelco.com*; the subject line should read Source Code Request. You will then receive an e-mail with a link for you to download the source code.

This offer is valid for a period of three (3) years from the date of the distribution of this product by Pelco.

WARNING: This product is sensitive to Electrostatic Discharge (ESD). To avoid ESD damage to this product, use ESD safe practices during installation. Before touching, adjusting or handling this product, correctly attach an ESD wrist strap to your wrist and appropriately discharge your body and tools. For more information about ESD control and safe handling practices of electronics, please refer to ANSI/ESD S20.20-1999 or contact the Electrostatic Discharge Association (www.esda.org).

Green The materials used in the manufacture of this document and its components are compliant to the requirements of Directive 2002/95/EC.

This equipment contains electrical or electronic components that must be recycled properly to comply with Directive 2002/96/EC of the European Union regarding the disposal of waste electrical and electronic equipment (WEEE). Contact your local dealer for procedures for recycling this equipment.

Description

The IP110 Series Camclosure® is an indoor/outdoor, fixed mini dome system with a built-in 100Base-TX network interface for live streaming to a standard Web browser (Microsoft® Internet Explorer® or Mozilla® Firefox®). The network mini dome features open architecture connectivity for third-party software recording solutions and is also Endura Enabled™ to record, manage, configure, and view multiple live streams.

The IP110 Series Camclosure also includes built-in Power over Ethernet (PoE), which supplies power to the camera through the network. If PoE is not available, the unit is prewired for 24 VAC.

Before installing your new system, thoroughly familiarize yourself with the information in this manual.

MODELS

Table A. IP110 Series Models

Camera Type	Lower Dome	Lens	Lens Type	NTSC	PAL
Day/Night, Wide Dynamic Range	Smoked	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP110-DWV9 IP110-DWV22	
Day/Night, Wide Dynamic Range	Clear	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP111-DWV9 IP111-DWV22	
Day/Night	Smoked	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP110-DNV9 IP110-DNV22	IP110-DNV9X IP110-DNV22X
Day/Night	Clear	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP111-DNV9 IP111-DNV22	IP111-DNV9X IP111-DNV22X
Color, Wide Dynamic Range	Smoked	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP110-CWV9 IP110-CWV22	
Color, Wide Dynamic Range	Clear	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP111-CWV9 IP111-CWV22	
Color, High Resolution	Smoked	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP110-CHV9 IP110-CHV22	IP110-CHV9X IP110-CHV22X
Color, High Resolution	Clear	3.0 to 9.0 mm 9.0 to 22.0 mm	Varifocal, Auto Iris	IP111-CHV9 IP111-CHV22	IP111-CHV9X IP111-CHV22X

PARTS LIST

The following parts are supplied with the IP110 Series Camclosure integrated camera system:

Qty	Description
1	IP110 Series Camclosure integrated camera system • Cover and back box (assembled) • Trim ring with bubble and dome liner • Camera module
1	1/8-inch hollow screwdriver bit
2	Screws (with washers), 8-32 x 0.375-inch, Phillips pan head (attached to cover and back box)
3	Screws, 6-32 x 0.75-inch, Phillips pan head
2	Screws, 8-32 x 0.75-inch, Phillips flat head
2	Screws, 8-32 x 0.75-inch, Phillips pan head

Basic System Configurations

IMPORTANT NOTE. PLEASE READ. The network implementations in this document are shown as general representations only and are not intended to show detailed network topologies. Your actual network will differ, requiring changes or perhaps additional network equipment to accommodate the systems as illustrated. Please contact your local Pelco representative to discuss your specific requirements.

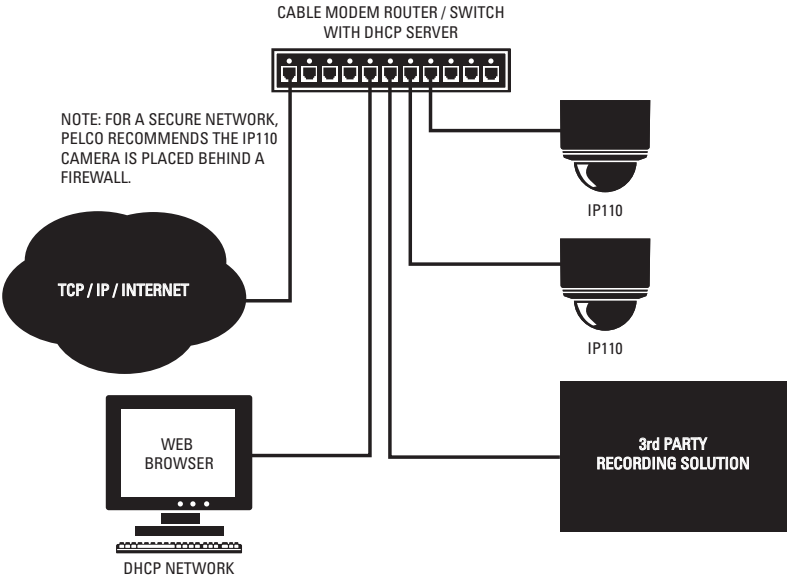


Figure 1. DHCP Network Example

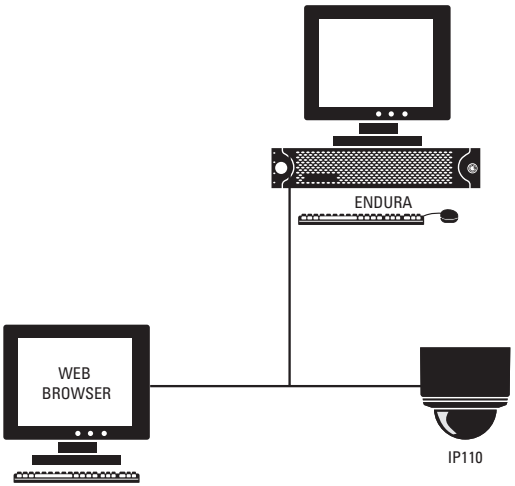


Figure 2. Endura Network Example

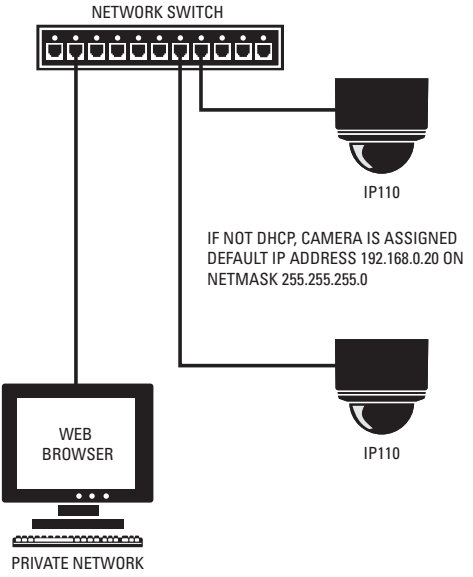


Figure 3. Private Network Example

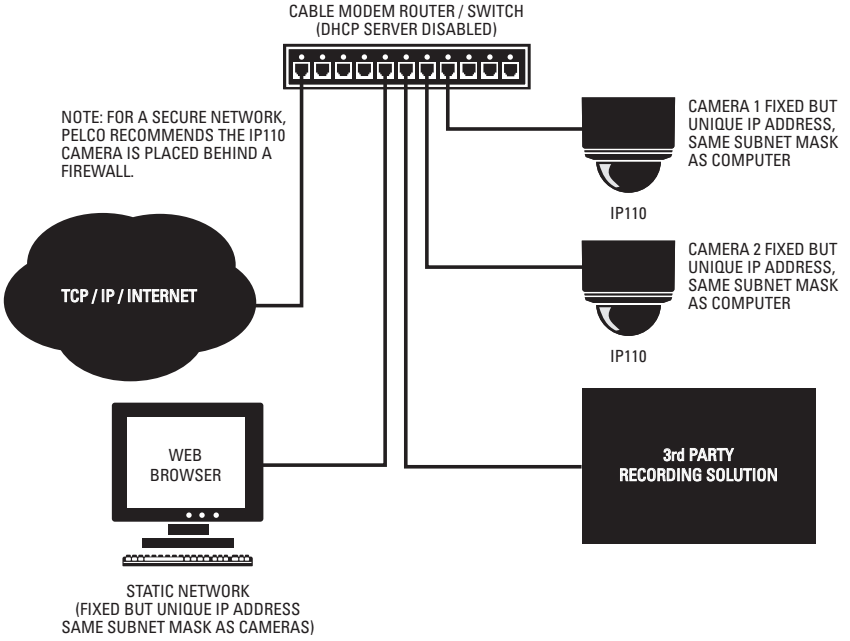


Figure 4. Static Network Example

Cover and Back Box Installation

The IP110 Series Camclosure integrated camera system mounts only to a surface. It can be wired through the cover into a surface, electrical box, plaster ring, or through a side conduit opening.

NOTE: A flash mount adaptor ring is available. Refer to the IP110-F Flush Mount Adaptor Installation manual (C2238M) for installation instructions.

BASIC SURFACE INSTALLATION

1. Remove the two 8-32 x 0.375-inch Phillips pan head screws and washers (supplied) to separate the cover from the back box.
2. Cut out the hole for the cable and wiring. Pull the cable and wires through the mounting surface and then through the hole of the cover.
3. Attach the cover to the mounting surface (hardware not supplied). Use stainless steel hardware when installing the system outdoors.
4. Install the camera module into the back box before installing the back box into the cover. Rotate the camera module to access the mounting holes inside the back box (refer to *Camera Module* on page 19 for more information).
5. Connect the cable and wires (refer to *Wiring Tables* on page 16 for information).
6. Reinstall the back box inside the cover. Use the two 8-32 x 0.375-inch Phillips pan head screws and washers (removed earlier) to secure the back box to the cover.

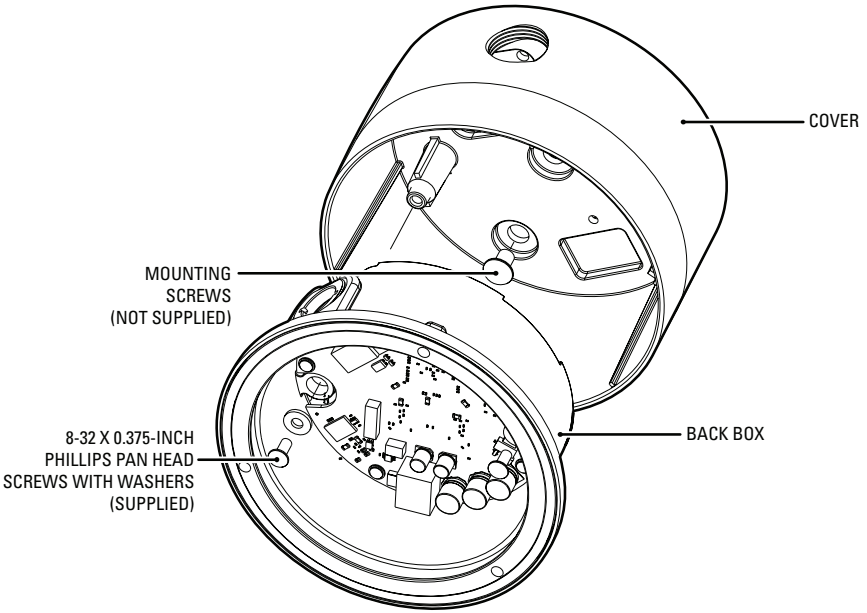


Figure 5. Basic Surface Installation

4S ELECTRICAL BOX INSTALLATION

1. Attach an ICS110-AP adapter plate (not supplied) to a 4S electrical box. Use two 8-32 x 0.75-inch Phillips flat head screws (supplied with both the IP110 and the adapter plate).
2. Remove the two 8-32 x 0.375-inch Phillips pan head screws and washers to separate the cover from the back box.
3. Pull the cable and wires into the cover.
4. Attach the cover to the adapter plate with four 8-32 x 0.375-inch Phillips pan head screws (supplied with the adapter plate). Use stainless steel hardware when installing the system outdoors.
5. Install the camera module into the back box before installing the back box into the cover. Rotate the camera module to access the mounting holes inside the back box (refer to *Camera Module* on page 19 for more information).
6. Connect the cable and wires (refer to *Wiring Tables* on page 16 for information).
7. Reinstall the back box inside the cover. Use the two 8-32 x 0.375-inch Phillips pan head screws and washers (removed earlier) to secure the back box to the cover.

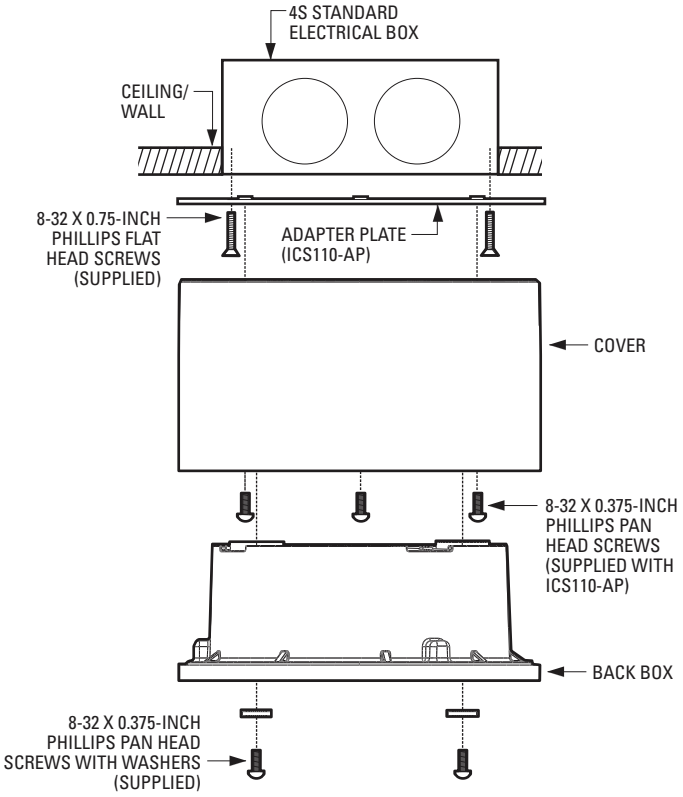


Figure 6. 4S Electrical Box Installation

404 PLASTER RING INSTALLATION

1. Remove the two 8-32 x 0.375-inch Phillips pan head screws and washers (supplied) to separate the cover from the back box.
2. Pull the cable and wires into the cover. Use three 6-32 x 0.75-inch Phillips pan head screws (supplied) or two 8-32 x 0.75-inch Phillips pan head screws (supplied) to attach the cover to an installed 404 plaster ring. Use stainless steel hardware when installing the system outdoors.
3. Install the camera module into the back box before installing the back box into the cover. Rotate the camera module to access the mounting holes inside the back box (refer to *Camera Module* on page 19 for more information).
4. Connect the cable and wires (refer to *Wiring Tables* on page 16 for information).
5. Reinstall the back box inside the cover. Use the two 8-32 x 0.375-inch Phillips pan head screws and washers (removed earlier) to secure the back box to the cover.

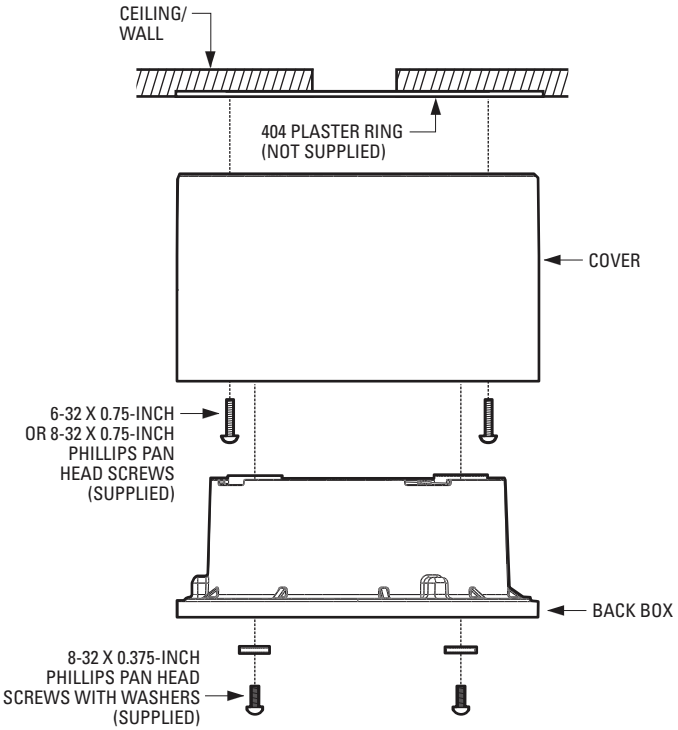


Figure 7. 404 Plaster Ring Installation

SIDE CONDUIT INSTALLATION

1. Remove the two 8-32 x 0.375-inch Phillips pan head screws and washers (supplied) to separate the cover from the back box.
2. Remove the conduit plug from the cover. Install a 0.75-inch (1.91 cm) threaded conduit connector (not supplied) into the conduit hole in the cover.
3. Attach the cover to the mounting surface (hardware not supplied). Use stainless steel hardware when installing the system outdoors.
4. Install the camera module into the back box before installing the back box into the cover. Rotate the camera module to access the mounting holes inside the back box (refer to *Camera Module* on page 19 for more information).
5. Connect the cable and wires (refer to *Wiring Tables* on page 16 for information).
6. Reinstall the back box inside the cover. Use the two 8-32 x 0.375-inch Phillips pan head screws and washers (removed earlier) to secure the back box to the cover.

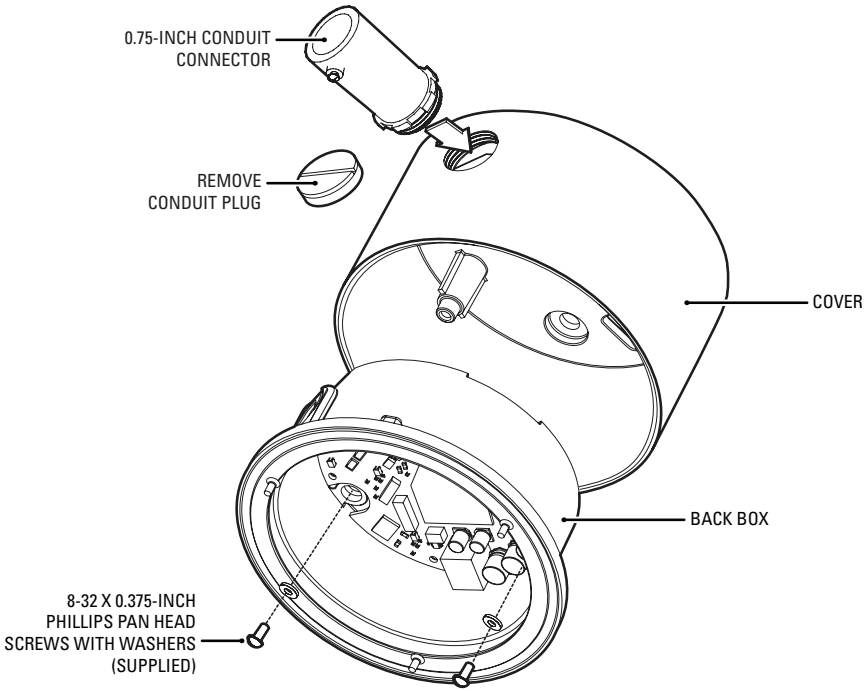


Figure 8. Side Conduit Installation

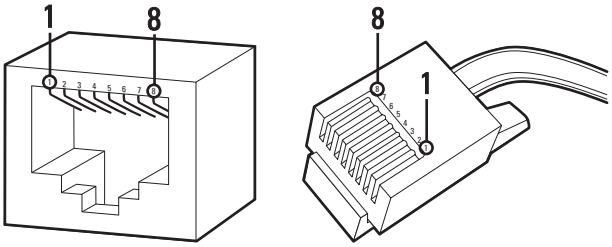
Wiring Tables

CAT5 CABLE

Connect a Cat5 cable to the RJ-45 network connector. The 8-pin connector includes video and PoE for the camera. PoE (IEEE 802.3af) injects power over the same cabling that carries the network data, eliminating the need for a separate power supply. This simplifies the installation and operation of the camera without any degradation of network performance.

NOTE: The IP110 Camclosure will autosense and work with either a cross over cable or straight cable.

Refer to Figure 9 for pin descriptions



Pin	Function
1	TX+
2	TX-
3	RX+
4	PoE 1-2
5	PoE 1-2
6	RX-
7	PoE 3-4
8	PoE 3-4

Figure 9. Cat5 Cable Pin Descriptions

ALARM AND 24 VAC WIRES

Table B. Wire Descriptions

Wire Color	Description
Black	24 VAC (use only if PoE is not connected)
Red	24 VAC (use only if PoE is not connected)
Blue	Alarm In
Blue/White	Alarm In, Return
Green	Relay Out
Green/White	Relay Out, Return

CONNECTING A RELAY DEVICE

The IP110 Camclosure has an output for triggering an external device. It supports both momentary and continuous relay operation.

You can operate the relay interactively, during an active connection, or automatically to coincide with certain events. Typical applications include activating a door, gate or lock, or switching on lights or other electrical devices.

⚠ **WARNING:** Do not exceed the maximum rating of 12 VDC, 0.15 A.

Figure 10 shows how to wire the relay with its power source to the Camclosure.

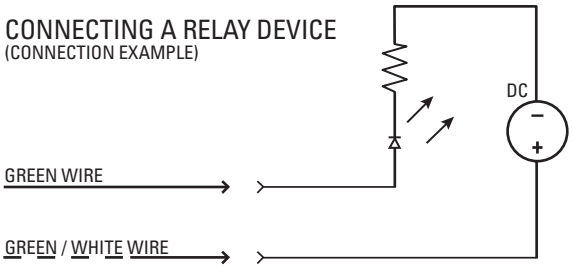


Figure 10. Relay Wiring

NOTE: The green/white wire is internally connected to the Camclosure chassis. Any connected signaling device should remain floating with respect to the Camclosure chassis; otherwise damage could result.

CONNECTING ALARMS

The IP110 Camclosure provides an alarm input for external signaling devices, such as door contacts or motion detectors. Both normally open and normally closed devices are supported. The IP110 Series Camclosure supports supervised and unsupervised alarms.

Figure 11 shows how to wire the IP110 Camclosure to an alarm.

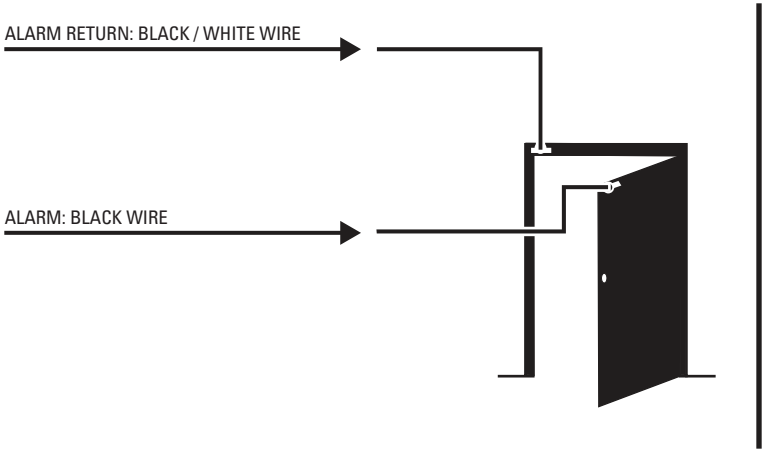


Figure 11. Unsupervised Alarm Input Wiring

NOTE: The black wire is internally connected to the Camclosure chassis. Do not connect directly to any potential except chassis ground.

Camera Module

The IP110 Series Camclosure camera module includes the camera, camera bracket, and heater board. To perform most camera adjustments, you must remove the module from the back box.

Use the following instructions to install or remove the camera module.

⚠ **WARNING:** Heater elements could be hot! When camera power is on, use caution when adjusting the camera. This applies to all models.

CAMERA ORIENTATION

The camera module is configured for ceiling mounting at the factory. For wall mounting, you must change the camera orientation or the video image will be upside down.

To change the camera orientation (refer to Figure 12):

1. Remove the camera module from the back box (if necessary).
2. Remove the tilt adjustment screw and lock washer from each side of the camera.
3. Carefully rotate the camera one-half turn. Make sure the wiring harness does not bind.
4. Reinstall the tilt adjustment screw and lock washer on each side of the camera.
5. Verify the camera orientation.

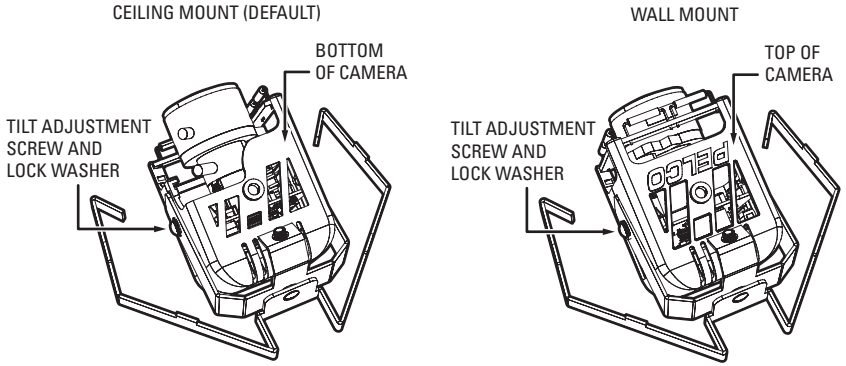


Figure 12. Camera Orientation

MODULE INSTALLATION

To install the camera module into the back box:

1. Plug the camera (10-pin), heater board (4-pin), and service (3-pin) connectors into the back box (refer to Figure 13).

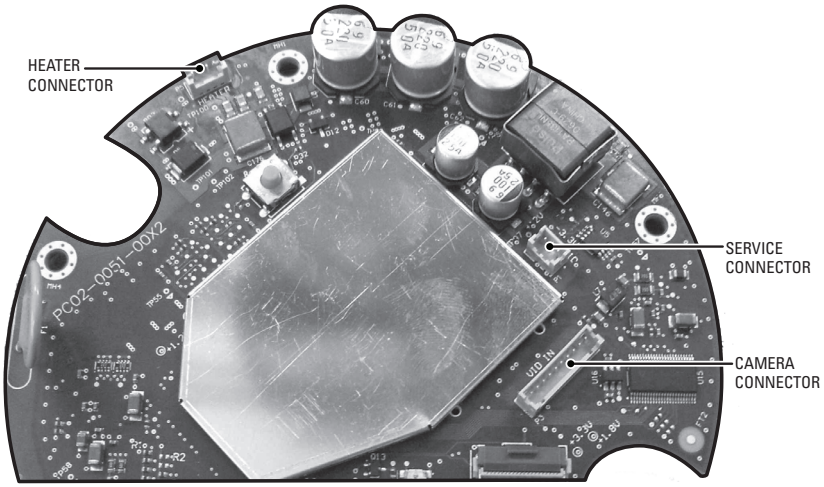


Figure 13. Back Box Connectors

2. Make sure the tabs on the camera bracket and the service connector are pointing out of the enclosure and away from the ceiling or wall.
3. Gently squeeze the bracket, place it against the groove inside the back box, and then gently release (refer to Figure 14).

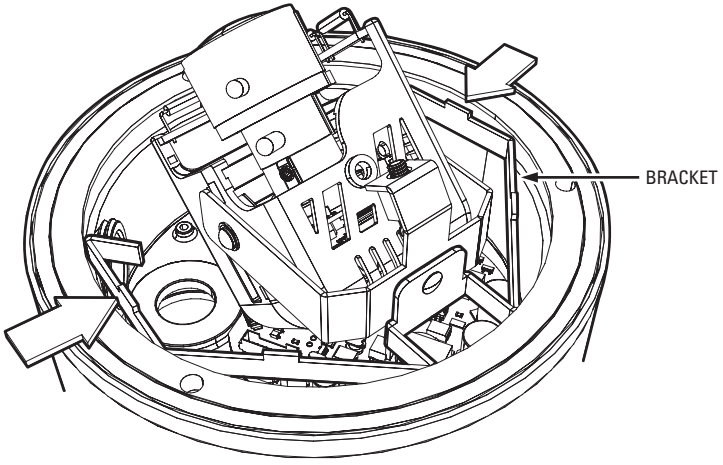


Figure 14. Camera Module Bracket

Camera Adjustments

To perform camera adjustments:

1. Make sure the camera and service connectors are connected to the board inside the back box. You may have to remove the camera module from the back box.
2. Connect a monitor to the service connector (refer to *Service Connector* on page 32). Turn on the monitor.
3. Turn on the camera. The camera will start the following configuration process:
   - The green LED inside the back box flashes five times per second for approximately two minutes, or until the PC or server recognizes the mini dome.
   - If the dome is not connected to a Dynamic Host Configuration Protocol (DHCP) PC/server, the green LED will flash for approximately four minutes before the camera switches to an automated private IP addressing mode.

     NOTE: If the IP110 is connected to a DHCP network, the server will automatically assign an IP address to the camera. If the IP110 is connected to static network, the IP address 192.168.0.20 on netmask 255.255.255.0 is automatically assigned to the camera. If the camera has an older software version installed (versions 01.00.0038 and older for IP110 and versions 01.00.0018 for IP3701H), the network will automatically cycle through the IP address range of 169.254.200.0 through 169.254.200.255, on netmask 255.255.255.0. The first available address located will be assigned to the IP110. If the network cannot find an open address in the default range, contact your network administrator.
4. To adjust the camera, you will need a miniature trimpot adjustment tool with a 0.05-inch (1.27 mm) blade. Suggested tools include a miniature flat-tip screwdriver, a Philmore trimpot tool (#63-6808), and the Philmore 10-piece tool set (#63-910).
5. Refer to the following sections for detailed information on camera adjustments:
   - *Varifocal Lens Zoom and Focus Adjustments* on page 22
   - *DN/CH Series Adjustments* on page 24
   - *DW/CW Series (Wide Dynamic Range) Adjustments* on page 27
6. After you have adjusted the unit, reinstall the camera module into the back box, and then install the trim ring, bubble, and dome liner (refer to page 31).

VARIFOCAL LENS ZOOM AND FOCUS ADJUSTMENTS

NOTE: You will need a miniature Phillips or flat-tip screwdriver to loosen and tighten the locking screws.

To adjust the field of view:

1. Loosen the zoom locking screw (refer to Figure 15).
2. Turn the zoom adjustment ring clockwise or counterclockwise to select the field of view.
3. Tighten the zoom locking screw.

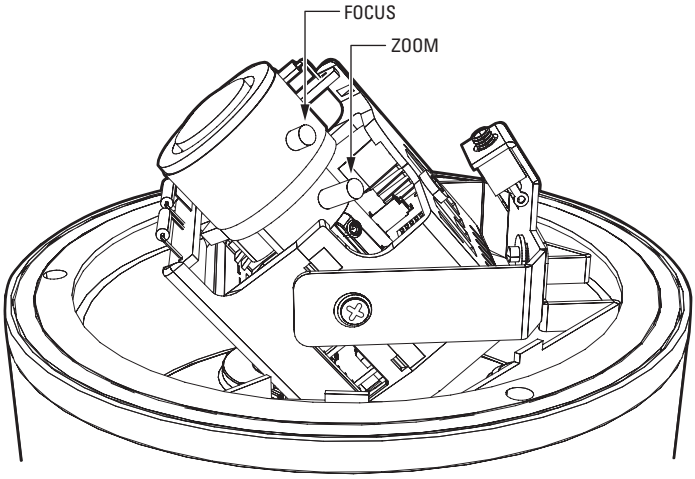


Figure 15. Location of Zoom and Focus Locking Screws

To adjust the focus:

1. Loosen the focus locking screw.
2. Position the inverted dome approximately 0.125 inch (3.175 mm) from the front of the lens. Make sure that the lens and the dome are centered (refer to Figure 16).
3. Turn the focus locking screw clockwise or counterclockwise to adjust the focus.
4. When the optimal focus is reached, tighten the focus locking screw.

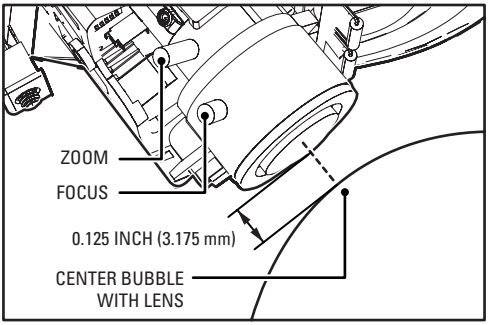


Figure 16. Adjusting the Focus

DN/CH SERIES ADJUSTMENTS

Refer to Figure 17 to adjust the IP110-DN or IP110-CH model.

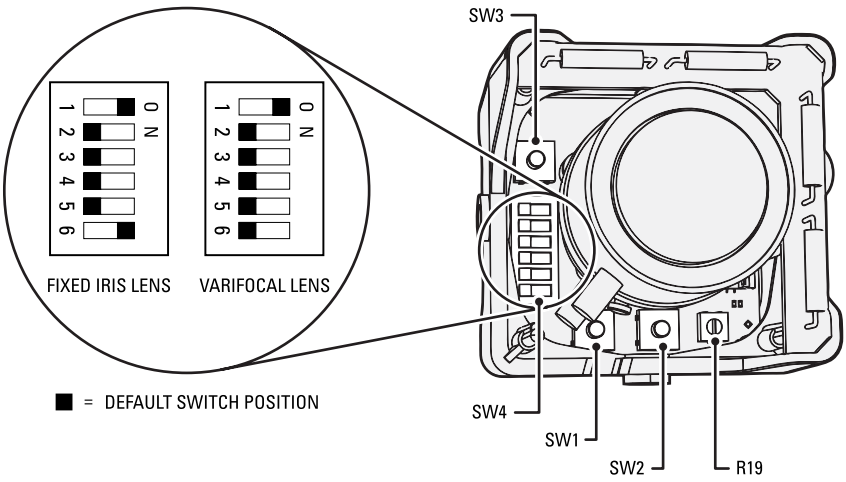


Figure 17. Adjusting the IP110-DN/CH Series Camclosure

SWITCH SETTINGS

Locate the DIP switch. Then set the switches for your installation.

SW4-1: Auto Gain Control

The automatic gain control (AGC) adjusts the image automatically to compensate for changes in light levels.

Set SW4-1 to ON to enable AGC. Set it to OFF to disable AGC. The default setting is ON.

SW4-2: Backlight Compensation

The backlight compensation (BLC) feature compensates for backlit scenes by enhancing objects in the center of the scene.

Set SW4-2 to ON to enable BLC. Use this setting if a bright backlight is present and the subject in the center of the picture appears dark or as a silhouette.

Set it to OFF to disable backlight compensation. This is the default setting.

SW4-3: N/A

SW4-4: Flickerless

In certain lighting conditions, a flicker in the light source may affect camera operation. Flickering can be caused by a number of conditions, including the quality of the source power and the age and type of fluorescent bulbs and ballasts.

Set SW4-4 to ON to enable flickerless operation. The camera will remove the effects of flickering when present. The shutter speed will be set to 1/120 (NTSC) or 1/100 (PAL).

Set it to OFF to disable flickerless operation. This is the default setting.

NOTE: If you enable flickerless operation, you should use AC line lock for best results.

SW4-5: Auto White Balance/Manual White Balance

Auto white balance (AWB) is enabled by default (OFF).

To manually set and lock the white balance:

1. Set SW4-5 to OFF.
2. Hold a white background in front of the lens until the video shows all white.
3. While holding the background in place, set SW4-5 to ON. A blue blinking block appears on the video image for a few seconds. When the block changes to solid green, the manual white balance (MWB) process is complete.

SW4-6: Reserved

Do not change SW4-6 from its factory setting. SW4-6 must be set to OFF for Varifocal models; it must be set to ON for fixed iris lenses.

BLEMISH DETECTION

If small white or color spots appear in the video image, one or more pixels on the camera imager may be defective. (This condition is common for both CCD and CMOS imagers.)

DN and CH Series cameras with auto iris lenses automatically detect and correct defective pixels during startup. Video turns on, then off, and then on again. If white or color spots still appear, you can correct the defective pixels manually.

CH Series cameras with fixed iris lenses do not automatically detect and correct defective pixels. You can correct the defective pixels manually.

To manually correct defective pixels:

1. Cover the lens completely. Make sure no light can enter the lens.

   NOTE: The mechanical iris lens aperture does not completely block the light.
2. Press and hold button SW3 for one second. The camera will find and correct defective pixels.

   NOTE: Any defective pixels that cannot be completely corrected may still appear.
3. Release button SW3.
4. Uncover the lens for normal camera operation.

DAY/NIGHT OPERATION

NOTE: This section only applies to DN model cameras.

DN model cameras regularly check the brightness level of the field of view to determine when to switch between day (color) and night (black-white) operation.

Actual brightness threshold levels are affected by camera angle, amount of zoom, field of view, lens, and type of lighting. The switching process lasts from seven to 10 seconds.

Figure 20 and Table C show how the camera switches between color and black-white operation.

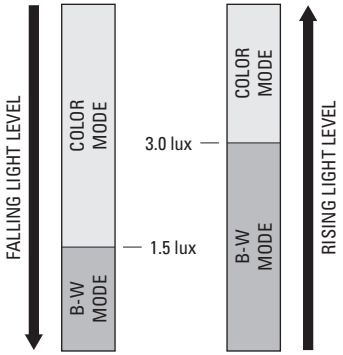


Figure 18. DN Models Threshold Switching Levels

Table C. DN Models Switching Thresholds

Color to B-W	1.5 lux ±1.0 lux
B-W to Color	3.0 lux ±1.0 lux

NOTE: These switching thresholds are approximate. Use the thresholds in Table C as a guide when installing the unit.

DW/CW SERIES (WIDE DYNAMIC RANGE) ADJUSTMENTS

Refer to Figure 19 to adjust the IP110-DW or IP110-CW model.

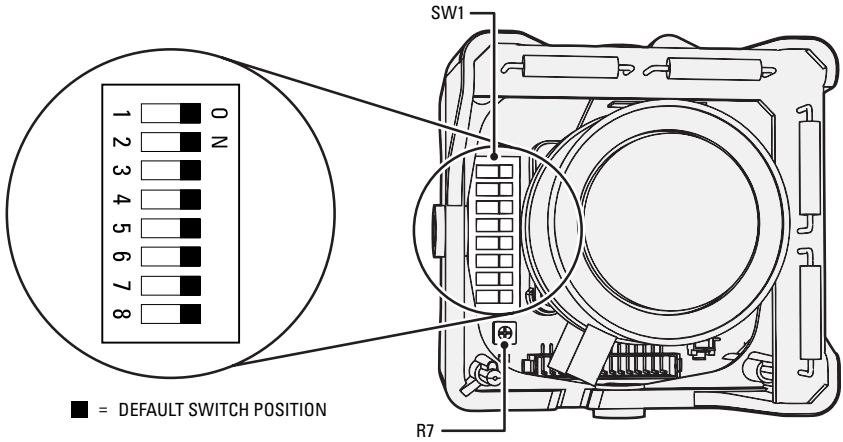


Figure 19. Adjusting the IP110-DW/CW Series Camclosure

SWITCH SETTINGS

Locate the DIP switch. Then set the switches for your installation.

SW1-1: Video Format

Set SW1-1 to ON for NTSC. Set it to OFF for PAL. The default setting is ON.

SW1-2: N/A

SW1-3: Interlaced Scanning/Progressive Scanning

Interlaced scanning is the standard for analog recording installations. Each frame contains one odd and one even field, each processed separately.

Progressive scanning is better for digital recording installations. Each frame is processed as a whole, which results in less blurring and cleaner digital conversion. It also saves storage space on digital video recorders.

Set SW1-3 to ON to select interlaced scanning.

Set it to OFF to select progressive scanning. The default setting is ON.

SW1-4: Auto White Balance/Manual White Balance

Auto white balance (AWB) is enabled by default (ON).

To manually set and lock the white balance:

1. Set SW1-4 to ON.
2. Hold a white background in front of the lens until the video shows all white.
3. While holding the background in place, set SW1-4 to OFF. A green block and a white block alternate briefly on the video image until the manual white balance (MWB) process is complete.

SW1-5: Fluorescent/General

Enable this option to adjust the camera for best operation under fluorescent lighting.

Set SW1-5 to OFF for fluorescent lighting. Set it to ON for general lighting. The default setting is ON.

NOTE: If you use fluorescent operation, you should use AC line lock for best results.

SW1-6: General/Maximum Wide Dynamic Range

Maximum wide dynamic range (WDR) supports about 36 dB of additional dynamic range over a standard camera. Use it for installations that require the maximum WDR.

General WDR supports about 20 dB of additional dynamic range over a standard camera. Use it for installations that do not require the maximum WDR.

Set SW1-6 to ON to select maximum WDR. Set it to OFF to select general WDR. The default setting is ON.

SW1-7: Digital Slow Shutter

The default shutter speed for NTSC is 30 frames per second (fps). It is 25 fps for PAL. This is also known as SENS 2X.

You can decrease the shutter speed to 7.5 fps (NTSC) or 6.25 fps (PAL). This is known as SENS 8X, which improves low light sensitivity.

Set SW1-7 to ON to select SENS 2X. Set it to OFF to select SENS 8X. The default setting is ON.

SW1-8: Day/Night Operation (DW models only)

NOTE: On CW models, SW1-8 is unused and does not affect camera operation.

DW model cameras regularly check the brightness level of the field of view to determine when to switch between day (color) and night (black-white) operation. Use SW1-8 to set the general light levels at which the camera will automatically switch.

Set SW1-8 to ON (dark) to use standard thresholds to switch between color and black-white operation. This is the default.

Set it to OFF (dusk) to use higher light thresholds to switch between color and black-white operation.

Actual brightness threshold levels are affected by camera angle, amount of zoom, field of view, lens, and type of lighting. The switching process lasts from seven to 10 seconds.

Figure 18 and Table D show how the camera switches between color and black-white operation for each setting.

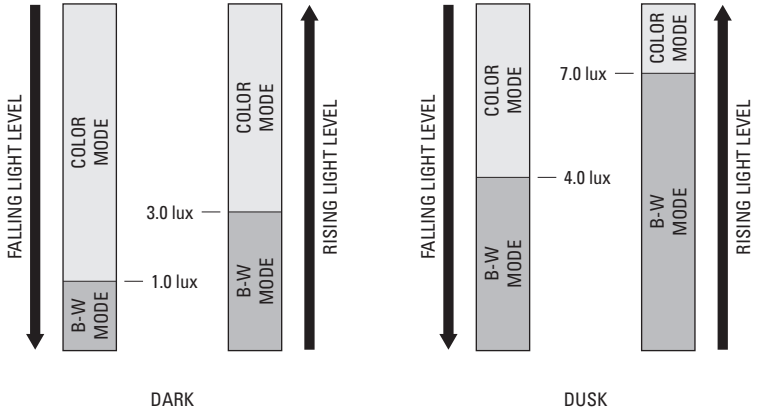


Figure 20. DW Models Threshold Switching Levels

Table D. DW Models Switching Thresholds

	Dark (ON)	**Dusk (OFF)**
Color to B-W	1.0 lux	4.0 lux
B-W to Color	3.0 lux	7.0 lux

NOTE: These switching thresholds are approximate and were measured using a 3.0 to 9.5 mm lens at f/1.0. Use the thresholds in Table D as a guide when installing the unit.

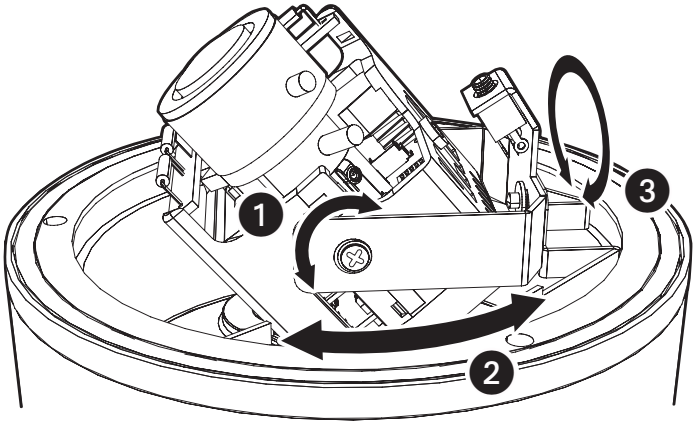
AUTO IRIS LEVEL ADJUSTMENT

The electronics of the IP110-DW and IP110-CW Series Camclosures automatically adjust the camera to the auto iris. Auto iris level adjustments are not necessary.

Camera Positioning

Manually rotate and tilt the camera module to position the camera, and then tighten the tilt screws (axis 1 in Figure 21).

NOTE: Do not over-rotate the module. Excessively turning the module in one direction could result in damage to the wiring.



1 Tilt 80° (20° to 100°) 2 Pan 360° 3 Rotation 360°

Figure 21. Positioning the Camera

Install Dome and Trim Ring

1. To adjust the dome liner (refer to Figure 22):
   a. Align the screw holes in the trim ring with those in the back box to identify the proper dome liner position.
   b. Loosen the three Phillips screws located in the trim ring.
   c. Insert the blade of a standard screwdriver in one of the adjustment grooves. Rotate the dome liner to position the viewing window over the camera lens.
   d. Tighten the three Phillips screws to lock the dome liner in place.

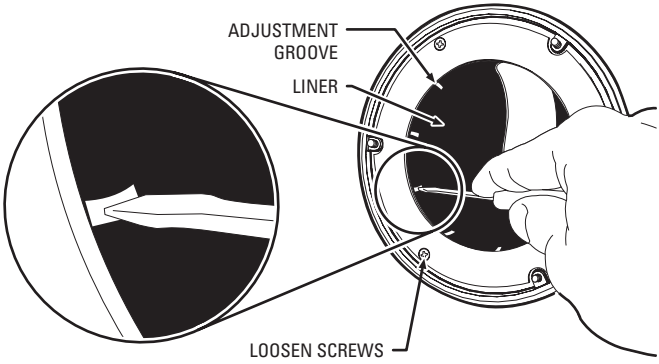


Figure 22. Dome Liner Adjustment

2. Align the screw holes in the trim ring with those in the back box.
3. Tighten the tamper-resistant screws through the trim ring into the back box. Use the 1/8-inch hollow screwdriver bit (supplied).

Service Connector

The IP110 Series Camclosure integrated camera system includes a service connector that outputs camera video. Use it at the installation site to set up the field of view and focus the camera.

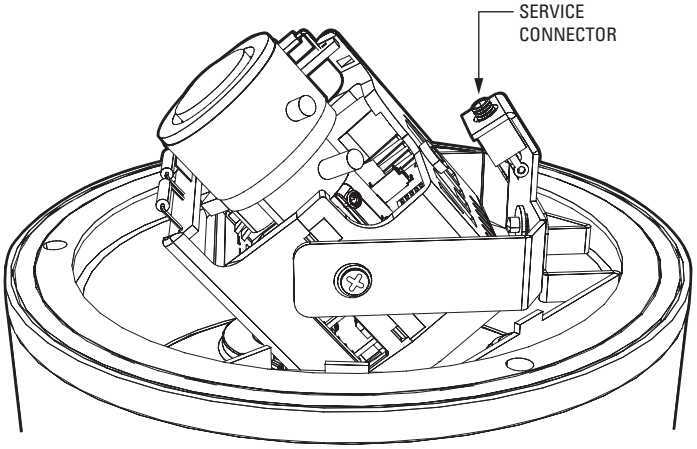


Figure 23. Service Connector

Pelco offers two optional items (CST150 and ICS-SC) that plug directly into the service connector. Before using either option, you must loosen the tamper-resistant screws to remove the trim ring from the back box. Use the 1/8-inch hollow screwdriver bit (supplied).

The CST150 has a 3-foot (0.9 m) cable and microdisplay for viewing camera video. Plug it into the service connector and view the video.

NOTE: The three buttons on the CST150 are not used with the IP110 Series Camclosure.

The ICS-SC has a 4-foot (1.2 m) cable with a service connector and a BNC connector. Plug the service connector into the unit. Then connect the other end to any standard BNC (VIDEO IN) connector on a monitor.

To assemble a longer service cable for the Camclosure integrated camera system, purchase the following items from a local electronics supply store:

Qty	Description
1	2.5 mm monaural headphone plug
1	CPM 88 miniature coaxial connector
1	RG174/U coaxial cable

To assemble the cable:

1. Attach the CPM 88 miniature coaxial connector to one end of the cable. Follow the directions supplied with the miniature coaxial connector.
2. Attach the 2.5 mm monaural plug to the other end of the coaxial cable (refer to Figure 24):
    a. Remove the support sleeve from the plug.
    b. Slip the support sleeve over the end of the cable.
    c. Prepare the cable.

d. Solder the center connector of the cable to the center pin of the plug.

e. Thread the braid of the cable through the hole in the crimp pin.

f. Solder the braid to the top of the crimp pin.

g. Crimp the end of the crimp pin around the cable.

h. Reassemble the support sleeve and the plug.

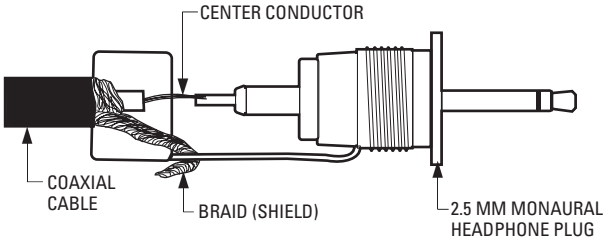


Figure 24. Attaching the 2.5 mm Monaural Headphone Plug

Reset Button

Use the reset button located on the board inside the back box to access the following modes described in Table E.

Table E. Reset Button Modes and Descriptions

Mode	Function	Unit Status Indicator Light
Configuration	Starts the reset LED selection sequence.	Flashes green.
Reboot	Restarts the unit.	Flashes green and red simultaneously, when entering this mode. The LED then flashes green when mode is selected and during the reboot.
Reset	Resets the unit to factory default settings, and then restarts the unit.	Flashes red when entering this mode. Flashes red when the mode is selected, and then flashes green when the camera restarts. The camera is off line during reset mode.
Cancel	Cancels any configuration or reset action.	No light.

To access one of these modes:

1. Press and hold the reset button. The unit starts cycling through the modes; hold the button for four seconds to access (cycle through) each mode. The unit status indicator flashes the color for the current mode (refer to the table above).
2. When the color of the desired mode appears, release the button.

NOTES:

- If there is no configuration activity for 15 minutes, the camera will automatically exit the reset mode.
- The LED is not lit during normal operation.

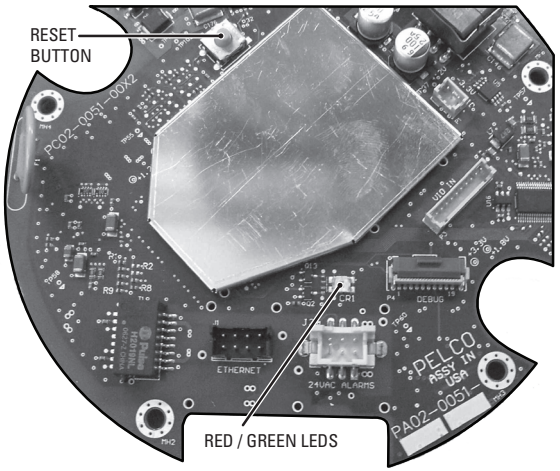


Figure 25. Location of Reset Button and LEDs

Troubleshooting

If the following instructions fail to solve your problem, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or +1-559-292-1981 (international) for assistance. You should have the serial number from the product label available.

Do not try to repair the unit yourself. Opening it immediately voids any warranty. Leave maintenance and repairs to qualified technical personnel. Exchange the defective unit and return it for repair.

Table F. Troubleshooting the IP110 Series *(1 of 3)*

Problem	Possible Cause	Suggested Remedy
No video	PoE power issue	• Check Cat5 cable connection. • Verify PoE is enabled. • Disconnect the Cat5 cable from the PoE, and then reconnect the cable. Check the LED inside the back box to verify that it is flashing green, indicating the camera has power.
	Power issue (24 VAC)	• Check the 24 VAC power supply connection. • Disconnect the network cable, and then reconnect it to the camera. Check the LED inside the back box to verify that it is flashing green, indicating the camera has power.
	Network connectivity issues	• Check network cable connections. • Disconnect the network cable, and then reconnect it to the camera. Check the LED inside the back box to verify that it is flashing green. • Replace network cable with new cable.
	Defective camera	• Check the camera's 10-pin connector inside the back box to make sure it is connected. • Use a service connector to check camera operation. Connect one end of the service connector to the service connector input inside the back box. Then connect the other end of the service connector to a monitor. • Replace camera module with new camera.
Image too dark/ black image	Installation error	• Make sure the lens cover in not installed. • Make sure camera is not located in an environment with zero light. • Use a service connector to check camera operation. Connect one end of the service connector to the service connector input inside the back box. Then connect the other end of the service connector to a monitor. • Replace camera module with new camera.

Table F. Troubleshooting the IP110 Series *(2 of 3)*

Problem	Possible Cause	Suggested Remedy
Image too light	Installation error	• Check DIP switch settings. • Use a service connector to check camera operation. Connect one end of the service connector to the service connector input inside the back box. Then connect the other end of the service connector to a monitor. • Replace camera module with new camera.
Image only displayed in black and white	Color level setting	• Check DIP switch settings. • Use a service connector to check camera operation. Connect one end of the service connector to the service connector input inside the back box. Then connect the other end of the service connector to a monitor. • Replace camera module with new camera.
	IR cut filter setting	• Check DIP switch settings. • Use a service connector to check camera operation. Connect one end of the service connector to the service connector input inside the back box. Then connect the other end of the service connector to a monitor. • Add direct light to camera. Wait 30 seconds to see if IR cut filter is functioning. • Replace camera module with new camera.
Flickering in image	Flickerless setting	• Check DIP switch settings. • Check power supply specifications. • Replace camera module with new camera.
Camera not discovered	No camera power	Verify the camera is powered correctly with PoE or with 24 VAC. Confirm power consumption with Web interface of PoE-capable switch or through blinking green LED during camera power up.
	Network conflict	• Verify the camera is physically connected to the same network as the PC running the Device Utility. • The utility will not work on a network that blocks multicast traffic. • Confirm that the green LED flashes when power is applied to the camera, indicating network connectivity.

Table F. Troubleshooting the IP110 Series *(3 of 3)*

Problem	Possible Cause	Suggested Remedy
Network not working	Faulty cable connection	Check all cable connections and ensure all plugs are properly plugged in.
	Incorrect serial device configuration	A hub will not work with the available network bandwidth shared across all ports. Use a Fast Ethernet switch, Gigabit Ethernet switch, or a cable modem router with an n-Port switch.
	Network connectivity issues	Contact your network administrator.
Unable to sync to an Endura® system manager or NTP server after changing networks	Network connectivity issues	• Disconnect the power cable (either PoE or 24 VAC) and then reconnect it to the camera. Power is indicated by the LED. The LED will flash (green) five times per second for approximately two minutes if the camera has power. • Reset the camera's factory defaults (refer to *Reset Button* on page 34).

Specifications

GENERAL

Pan/Tilt Adjustment	Manual
Pan	360°
Tilt	80° (20° to 100° range)
Rotation	360°
Construction	Aluminum with steel camera mounting bracket and polycarbonate dome
Impact	IP110 is a rugged product that exceeds an IK10++ rating of Standard EN62262 and can withstand up to 100J in a vertical impact
Cable Entry	One 0.75-inch (1.91 cm) NPT threaded opening on side; two 0.75-inch (1.91 cm) openings on NEMA cover
Finish	Gray polyester powder coat
Light Attenuation	
Smoked	f/1.5 light loss
Clear	Zero light loss
Unit Weight	2.2 lb (1.0 kg)

ELECTRICAL

Ports	RJ-45 connector for 100Base-TX Auto MDI/MDI-X Autonegotiate/Manual setting
Cabling Type	Cat5 or better for 100Base-TX
Input Voltage	24 VAC (18-36) or PoE (IEEE802.3af)
Power Consumption	<7.5 W, <13 W with heaters 24VAC: <0.5 A, <0.9 A with heaters
Alarm Input	10 VDC maximum, 5mA maximum
Alarm Output	0 to 15 VDC maximum, 75 mA maximum
Service Connector	Internal to housing 3-connector, 2.5 mm connector providing NTSC/PAL video outputs

VIDEO

Signal System	NTSC or PAL	
Compression	MPEG-4, MJPEG in Web viewing mode	
Video Streams	3, simultaneous	
Video Resolutions	NTSC	PAL
4CIF	704 x 480	704 x 576
2CIF	704 x 240	704 x 288
CIF	352 x 240	352 x 288
QCIF	176 x 120	176 x 144
Bit Rate Configurable	20 kbps to 2 Mbps per stream, implements EnduraView™	
Video Access form Web Browser	Camera live view for up to 10 video sources	
Users	10 simultaneous users, unlimited number of users using multicast	
Minimum Web Browser Requirements	PC (Pentium® 4 microprocessor, 1.6 GHz) with Windows® 98, Windows 2000, Windows XP (or later) or Mac® OS X 10.3.9 (or later)	
RAM	512 MB	
Ethernet Card	100 Megabits	
Web Browser	Internet Explorer 5.5 (or later) or Firefox 1.5 (or later)	
Screen Resolution	1024 x 768 pixels or higher, 16- or 32-bit pixel color resolution	

ENVIRONMENTAL

Environment	Low temperature, indoor/outdoor
Operating Temperature	-50° to 122°F (-46° to 50°C); de-ices to 25°F (-4°C)
Thermostat Operation	Heater is thermostatically controlled to activate at <41°F (<5°C)

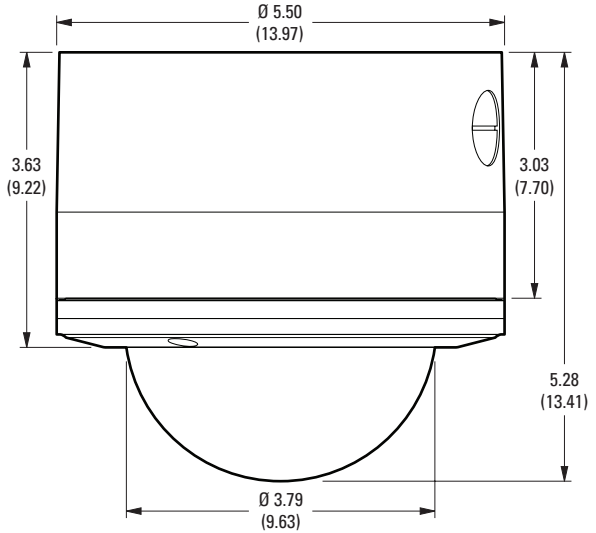
CAMERA

Service Connector	3-conductor, 2.5 mm connector for video output to optional ICS-SC cable	
Imaging Device	1/3-inch imager	
Picture Elements	NTSC	PAL
DW/CW	720 (H) x 540 (V)	720 (H) x 540 (V)
DN/CH	768 (H) x 494 (V)	752 (H) x 582 (V)
Dynamic Range DW/CW	102 dB typical/120 dB maximum	
Signal System	NTSC or PAL	
Scanning System DW/CW	2:1 interlace/progressive scanning (DIP switch selectable)	
Scanning System DN/CH	2:1 interlace	
Synchronization	Internal	
Electronic Shutter Range	Auto (1/15~1/22,000)	

LENS

Type	Varifocal with auto iris
Focal Length	3.0~9.5 mm 9.0~22.0 mm
Format Size	1/3-inch
Operation	
Iris	Auto (DC drive)
Focus	Manual
Zoom	Manual

(Design and product specifications subject to change without notice.)



NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.

REVISION HISTORY

Manual #	Date	Comments
C3432M	3/07	Original version.
C3432M-A	5/07	Cable harnesses modified per ECO 07-17470. Added picture elements to specifications.
C3432M-B	8/07	Added FCC Class B and revised DIP switch setting adjustments.
C3434M-C	11/07	Revised figures 20 and 22.
C3432M-D	1/08	Added Open Source Software Notice.
C3432M-E	4/08	Removed references to JRE per CN21186.
C3432M-F	6/08	Changed static IP address to new default 192.168.0.20 per CN21529.
C3432M-G	4/09	Added a lens focus procedure to *Camera Adjustments*. Removed supervised and unsupervised alarms information from *Connecting Alarms*. Added adaptor ring note to *Cover and Back Box Installation,* and added an input voltage note and impact statement to *Specifications*.

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PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship **for a period of one year** after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years:
  - Fiber optic products
  - TW3000 Series unshielded twisted pair (UTP) transmission products
  - CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models
- Three years:
  - Pelco-branded fixed camera models (CCC1390H Series, C10DN Series, C10CH Series, and IP3701H Series)
  - EH1500 Series enclosures
  - Spectra® IV products (including Spectra IV IP)
  - Camclosure® Series (IS, ICS, IP) integrated camera systems
  - DX Series digital video recorders, DVR5100 Series digital video recorders, Digital Sentry® Series hardware products, DVX Series digital video recorders, and NVR300 Series network video recorders
  - Endura® Series distributed network-based video products
  - Genex® Series products (multiplexers, server, and keyboard)
  - PMCL200/300/400 Series LCD monitors
- Two years:
  - Standard varifocal, fixed focal, and motorized zoom lenses.
  - DF5/DF8 Series fixed dome products
  - Legacy® Series integrated positioning systems
  - Spectra III™, Spectra Mini, Spectra Mini IP, Esprit®, ExSite®, and PS20 scanners, including when used in continuous motion applications.
  - Esprit Ti and TI2500 Series thermal imaging products
  - Esprit and WW5700 Series window wiper (excluding wiper blades).
  - CM6700/CM6800/CM9700 Series matrix
  - Digital Light Processing (DLP®) displays (except lamp and color wheel). The lamp and color wheel will be covered for a period of 90 days. The air filter is not covered under warranty.
  - Intelli-M® eIDC controllers
- One year:
  - Video cassette recorders (VCRs), except video heads. Video heads will be covered for a period of six months.
- Six months:
  - All pan and tilts, scanners, or preset lenses used in continuous motion applications (preset scan, tour, and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to a Pelco designated location. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental, or consequential damages (including loss of use, loss of profit, and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, sales order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product that does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

To expedite parts returned for repair or credit, please call Pelco at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair) and designated return location.

All merchandise returned for credit may be subject to a 20 percent restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid

www.pelco.com

Pelco, Inc. Worldwide Headquarters 3500 Pelco Way Clovis, California 93612 USA
USA & Canada Tel (800) 289-9100 Fax (800) 289-9150
International Tel +1 (559) 292-1981 Fax +1 (559) 348-1120